# Invasive alien plant project

The Virginia Native Plant Society (VNPS) and the Department of Conservation and Recreation (DCR) share a commitment to protect native plant habitats, especially those that support rare, threatened or endangered species. Many alien plants have become aggressive competitors that readily invade natural habitats. Competition between plant species is part of any natural habitat, but introduction of invasive alien species disrupts intricate balances and relationships evolved over millennia between native plants and their communities. Some invasive alien plants are serious agricultural weeds and some are toxic when consumed by livestock. Other invasive aliens, however, have a decided economic benefit as forage plants and in gardens. Thus, no single easy solution to the problem of invasive alien plants exists. Therefore, VNPS and DCR have combined their resources to confront this major threat to the ecological integrity of Virginia's landscapes.

## Goals of the Project

Given the complexity of the problems posed by invasive alien plants, VNPS and DCR have set forth the following goals:

- ***Identify*** alien plant species that have potential to become invasive in Virginia.
- ***Document*** threats posed by specific invasive alien plant species.
- ***Educate*** the public about the issue of invasive alien plant species and the use of native plants for conservation, restoration and landscaping purposes.
- ***Coordinate*** with other agencies and organizations to identify mutual concerns and develop reasonable solutions to the problem of invasive alien plants.
- ***Develop*** and use sound practices for control of invasive alien plants in natural areas.

## How You Can Help

- Use native plant species grown from local stock for conservation and landscaping purposes whenever possible. See our publications on Native Plants for Conservation, Restoration, and Landscaping on the DCR website.
- When using alien plants, avoid highly invasive species. See the list in this brochure and ask about our fact sheets on specific invasive alien plants, or view them on the DCR Natural Heritage or Virginia Native Plant Society web sites:

  http://www.state.va.us/dnh/ http://www.vnps.org

- Support public policies that restrict introduction of invasive alien plants and get involved in organizations that work to protect biodiversity.

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For more information, contact the Department of Conservation and Recreation or the Virginia Native Plant Society.

DCR
Department of Conservation & Recreation
CONSERVING VIRGINIA'S NATURAL & RECREATIONAL RESOURCES
217 Governor Street, Richmond, VA 23219
(804) 786-7951; http://www.state.va.us/dnh/

**Virginia Native Plant Society**
**Blandy Experimental Farm**
**400 Blandy Farm Lane, Unit 2**
**Boyce, VA 22620**
**(540) 837-1600**
**http://www.vnps.org**


# INVASIVE alien plant species in Virginia

Alien plants, also referred to as exotic or non-indigenous species, are introduced by people intentionally or accidentally into a region far from their native habitat. For the most part, alien plant species form an important part of our culture and contribute immensely to farming, gardening, landscaping and soil stabilization. Nevertheless, among thousands of plant species introduced to our area, some have displayed unexpected growth tendencies.

While most alien plant species do not persist in the wild, introductions since European settlement have substantially changed the composition of native plant communities throughout North America. Of the estimated 2,500 species of vascular plants that grow in the wild in Virginia, some 350 are not native to the state. While many of these are restricted to roadsides and other heavily disturbed sites, others readily invade natural and semi-natural landscapes, degrading native habitat.

Invasive alien plant species typically exhibit the following characteristics:

- Rapid growth and maturity
- Prolific seed production
- Highly successful seed dispersal, germination and colonization
- Rampant vegetative spread
- Ability to outcompete native species
- High cost to remove or control

Invasive alien plants often thrive on disturbed sites. Native plant communities fragmented by human disturbance are most vulnerable to invasion, but the most aggressive species can infest even intact ecosystems. Invasive alien plants have few or lack natural controls such as insects and disease that keep them in balance in their native habitats. They further threaten biodiversity when they harbor non-native pathogens, fungi or other organisms that can decimate native species, as with the chestnut blight.

## About the List

This list is published by Virginia Department of Conservation and Recreation (DCR) to inform land managers of potential risks associated with certain plant species known to exhibit invasive behavior in some situations. It is not regulatory and does not prohibit use of the plant species listed.

DCR and Virginia Native Plant Society use detailed criteria to assess the invasiveness of a plant. Factors used to rank each species include: cumulative impacts on natural areas; impacts on other species; potential to disperse and invade natural landscapes; distribution and abundance; and difficulty to manage.

## Invasiveness Ranking

- *Highly invasive species* exhibit the most invasive tendencies in natural areas and native plant habitats. They may disrupt ecosystem processes and cause major alterations in plant community composition and structure. They establish readily in natural systems and spread rapidly.
- *Moderately invasive species* may have minor influence on ecosystem processes, alter plant community composition and affect community structure in at least one layer. They may become dominant in the understory layer without threatening all species found in the community. These species usually require a minor disturbance to become established.
- *Occasionally invasive species* generally do not affect ecosystem processes but may alter plant community composition by out-competing one or more native plant species. They often grow in severely disturbed areas. Disturbances such as ice storm damage, wind-throw or road construction can lead to their presence. These species spread slowly or not at all from disturbed sites.

## Regions

For the purpose of this list, the state is divided into three regions: Coastal Plain, Piedmont and Mountains. The Coastal Plain and Piedmont regions follow conventional physiographic province boundaries. The Mountain region combines the Blue Ridge, Ridge and Valley, and Appalachian Plateau physiographic provinces.

## Habitat Requirements

The categories for light and soil requirements are broad and meant to give only a general indication of habitat adaptations for these plants.

# INVASIVE *alien plant species in Virginia*

This list was developed in a cooperative project between the Virginia Department of Conservation and Recreation's Division of Natural Heritage and the Virginia Native Plant Society

## Key

**Geographic Region**
M=Mountain
P=Piedmont
C=Coastal Plain

**Light Preferences**
F=full sun
P=partial sun
S=shade

**Soil Moisture**
H=hydric
M=mesic
X=xeric

| SCIENTIFIC NAME | COMMON NAME | REGION | | | LIGHT | | | MOISTURE | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | M | P | C | F | P | S | H | M | X |
| **Highly Invasive Species** | | | | | | | | | | |
| *Ailanthus altissima* | Tree-of-heaven | ● | ● | ● | ● | ● | | | ● | |
| *Alliaria petiolata* | Garlic mustard | ● | ● | | ● | ● | ● | | ● | |
| *Alternanthera philoxeroides* | Alligator weed | | | ● | ● | ● | | ● | | |
| *Ampelopsis brevipedunculata* | Porcelain-berry | | ● | | ● | ● | ● | | ● | |
| *Carex kobomugi* | Asiatic sand sedge | | | ● | ● | ● | | | | ● |
| *Celastrus orbiculata* | Oriental bittersweet | ● | ● | ● | | ● | ● | | ● | |
| *Centaurea dubia* | Short-fringed knapweed | ● | | | ● | ● | | | ● | ● |
| *Centaurea biebersteinii* | Spotted knapweed | ● | ● | ● | ● | ● | | | | ● |
| *Cirsium arvense* | Canada thistle | ● | ● | ● | ● | | | | ● | |
| *Dioscorea oppositifolia* | Chinese yam | ● | ● | ● | | ● | ● | | ● | |
| *Elaeagnus umbellata* | Autumn olive | ● | ● | ● | ● | ● | | | ● | |
| *Euonymus alata* | Winged burning bush | | ● | | | ● | ● | | ● | |
| *Hydrilla verticillata* | Hydrilla | | | ● | ● | ● | | ● | | |
| *Imperata cylindrica* | Cogon grass | | | ● | | ● | ● | | ● | |
| *Lespedeza cuneata* | Chinese lespedeza | ● | ● | | ● | | | | ● | |
| *Ligustrum sinense* | Chinese privet | ● | ● | ● | | ● | ● | | ● | |
| *Lonicera japonica* | Japanese honeysuckle | ● | ● | ● | ● | ● | ● | | ● | |
| *Lonicera morrowii* | Morrow's honeysuckle | ● | ● | | ● | ● | ● | | ● | |
| *Lonicera standishii* | Standish's honeysuckle | ● | ● | | | ● | ● | | ● | |
| *Lythrum salicaria* | Purple loosestrife | ● | ● | ● | ● | | | ● | ● | |
| *Microstegium vimineum* | Japanese stilt grass | ● | ● | ● | ● | ● | ● | ● | ● | |
| *Murdannia keisak* | Anellema | | ● | ● | ● | ● | | ● | | |
| *Myriophyllum aquaticum* | Parrot feather | ● | ● | ● | ● | | | ● | | |
| *Myriophyllum spicatum* | European water-milfoil | ● | ● | ● | ● | | | ● | | |
| *Phragmites australis* | Common reed | | ● | ● | ● | ● | | ● | ● | |
| *Polygonum cuspidatum* | Japanese knotweed | ● | ● | ● | ● | ● | | | ● | |
| *Polygonum perfoliatum* | Mile-a-minute | | ● | | ● | ● | ● | | ● | |
| *Pueraria lobata (P. montana)* | Kudzu vine | ● | ● | ● | ● | ● | ● | | ● | |
| *Ranunculus ficaria* | Lesser celandine | | | ● | | ● | ● | | ● | |
| *Rosa multiflora* | Multiflora rose | ● | ● | ● | ● | ● | | | ● | |
| *Rubus phoenicolasius* | Wineberry | ● | ● | ● | | ● | ● | | ● | |
| *Sorghum halepense* | Johnson-grass | ● | ● | ● | ● | ● | | | ● | |

| SCIENTIFIC NAME | COMMON NAME | REGION | | | LIGHT | | | MOISTURE | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | M | P | C | F | P | S | H | M | X |
| **Moderately Invasive Species** | | | | | | | | | | |
| *Acer platanoides* | Norway maple | ● | ● | ● | ● | ● | | | ● | |
| *Agropyron repens* | Quack grass | ● | ● | ● | ● | ● | | | ● | |
| *Agrostis tenuis* | Rhode Island bent-grass | ● | ● | | ● | ● | | | ● | |
| *Akebia quinata* | Five-leaf akebia | | ● | ● | ● | ● | ● | | ● | |
| *Albizia julibrissin* | Mimosa | ● | ● | ● | ● | ● | | | ● | |
| *Allium vineale* | Wild onion | ● | ● | ● | ● | ● | | | ● | |
| *Artemisia vulgaris* | Mugwort | ● | ● | ● | ● | ● | | | ● | ● |
| *Arthraxon hispidus* | Jointed grass | ● | ● | ● | ● | ● | ● | ● | ● | |
| *Arundo donax* | Giant reed | | ● | ● | ● | ● | | ● | ● | |
| *Berberis thunbergii* | Japanese barberry | ● | ● | ● | ● | ● | ● | | ● | |
| *Carduus nutans* | Musk thistle | ● | ● | ● | ● | | | | ● | |
| *Cassia obtusifolia* | Sickle pod | | ● | ● | ● | ● | | | ● | ● |
| *Centaurea jacea* | Brown knapweed | ● | ● | | ● | ● | | | ● | ● |
| *Cirsium vulgare* | Bull-thistle | ● | ● | ● | ● | | | | ● | |
| *Convolvulus arvensis* | Field-bindweed | ● | ● | ● | ● | ● | | | ● | |
| *Dipsacus laciniatus* | Cut-leaf teasel | ● | | | ● | | | | ● | |
| *Dipsacus sylvestris* | Common teasel | ● | ● | ● | ● | | | ● | ● | |
| *Egeria densa* | Brazilian water-weed | ● | ● | ● | ● | ● | | ● | | |
| *Euonymus fortunei* | Wintercreeper | | | ● | | ● | ● | ● | ● | |
| *Festuca elatior (F. pratensis)* | Tall fescue | ● | ● | ● | ● | ● | | | ● | |
| *Foeniculum vulgare* | Fennel | | ● | ● | ● | | | ● | ● | ● |
| *Glechoma hederacea* | Gill-over-the-ground | ● | ● | ● | | ● | ● | | ● | |
| *Hedera helix* | English ivy | | ● | ● | ● | ● | ● | | ● | |
| *Holcus lanatus* | Velvet-grass | ● | ● | ● | ● | ● | | ● | ● | |
| *Humulus japonicus* | Japanese hops | ● | ● | ● | ● | ● | ● | ● | ● | |
| *Ipomoea hederacea* | Ivy-leaved morning-glory | ● | ● | ● | ● | ● | | ● | ● | |
| *Ipomoea purpurea* | Common morning-glory | ● | ● | ● | ● | | | | ● | |
| *Iris pseudacorus* | Yellow flag | ● | ● | ● | ● | ● | | ● | | |
| *Ligustrum obtusifolium* | Blunt-leaved privet | | ● | ● | | | ● | | ● | |
| *Lonicera maackii* | Amur honeysuckle | ● | ● | | | ● | | | ● | |
| *Lonicera tatarica* | Tartarian honeysuckle | ● | ● | | ● | ● | | | ● | |
| *Lysimachia nummularia* | Moneywort | ● | ● | ● | ● | ● | ● | ● | ● | |
| *Melia azedarach* | China-berry | | ● | ● | ● | ● | | | ● | |
| *Paulownia tomentosa* | Princess tree | ● | ● | ● | ● | ● | | | ● | |
| *Phleum pratense* | Timothy | ● | ● | ● | ● | ● | | | ● | |
| *Phyllostachys aurea* | Golden bamboo | | ● | ● | ● | ● | | | ● | |
| *Poa compressa* | Canada bluegrass | ● | ● | ● | ● | ● | ● | | ● | ● |
| *Poa trivialis* | Rough bluegrass | ● | ● | ● | ● | ● | ● | ● | ● | |
| *Polygonum cespitosum* | Bristled knotweed | ● | ● | ● | ● | ● | ● | ● | ● | |
| *Populus alba* | White poplar | ● | ● | ● | ● | ● | | | ● | |
| *Rumex acetosella* | Red sorrel | ● | ● | ● | ● | ● | | | ● | |
| *Rumex crispus* | Curled dock | ● | ● | | ● | | | | ● | ● |
| *Setaria faberi* | Giant foxtail | | ● | ● | ● | ● | | | ● | |
| *Spiraea japonica* | Japanese spiraea | ● | ● | | | ● | ● | ● | ● | |
| *Stellaria media* | Common chickweed | ● | ● | ● | ● | ● | ● | | ● | |
| *Veronica hederifolia* | Ivy-leaved speedwell | ● | ● | ● | ● | ● | ● | | ● | |
| *Wisteria sinensis* | Chinese wisteria | | ● | ● | | ● | ● | | ● | |
| *Xanthium strumarium* | Common cocklebur | ● | ● | ● | ● | ● | | | ● | ● |

| SCIENTIFIC NAME | COMMON NAME | REGION | | | LIGHT | | | MOISTURE | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | M | P | C | F | P | S | H | M | X |
| **Occasionally Invasive Species** | | | | | | | | | | |
| *Agrostis gigantea* | Redtop | ● | ● | ● | ● | ● | | | ● | |
| *Ajuga reptans* | Bugleweed | ● | ● | ● | ● | ● | | | ● | ● |
| *Arrhenatherum elatius* | Oatgrass | ● | ● | ● | ● | ● | | | ● | |
| *Commelina communis* | Common dayflower | ● | ● | ● | ● | ● | | | ● | |
| *Conium maculatum* | Poison hemlock | ● | ● | ● | ● | ● | | | ● | |
| *Coronilla varia* | Crown-vetch | ● | ● | ● | ● | | | | ● | ● |
| *Dactylis glomerata* | Orchard grass | ● | ● | ● | ● | ● | | | ● | |
| *Elaeagnus angustifolia* | Russian olive | ● | ● | ● | ● | ● | | | ● | |
| *Elaeagnus pungens* | Thorny elaeagnus | | ● | ● | | ● | | | ● | |
| *Eragrostis curvula* | Weeping lovegrass | ● | ● | ● | ● | | | | ● | ● |
| *Euphorbia esula* | Leafy spurge | ● | ● | | | ● | ● | | ● | |
| *Ipomoea coccinea* | Red morning-glory | ● | ● | ● | ● | | | | ● | |
| *Lapsana communis* | Nipplewort | ● | | | ● | ● | | | ● | |
| *Lespedeza bicolor* | Shrubby bushclover | ● | ● | ● | ● | ● | | | ● | |
| *Lonicera fragrantissima* | Sweet breath of spring | | ● | | ● | ● | | | ● | |
| *Lonicera x bella* | Bell's honeysuckle | ● | ● | ● | ● | ● | | | ● | |
| *Lotus corniculatus* | Birdsfoot trefoil | ● | ● | ● | ● | ● | | | ● | ● |
| *Melilotus alba* | White sweet clover | ● | ● | ● | ● | ● | | | ● | |
| *Melilotus officinalis* | Yellow sweet clover | ● | ● | ● | ● | ● | | | ● | |
| *Miscanthus sinensis* | Silver grass | ● | ● | ● | ● | ● | | | ● | |
| *Morus alba* | White mulberry | ● | ● | ● | ● | ● | | | ● | |
| *Pastinaca sativa* | Wild parsnip | ● | ● | ● | ● | ● | | | ● | |
| *Perilla frutescens* | Beefsteak plant | ● | ● | ● | | ● | ● | | ● | |
| *Trapa natans* | Water chestnut | | | ● | ● | | | ● | ● | |
| *Ulmus pumila* | Siberian elm | | ● | | ● | ● | | | ● | |
| *Viburnum dilatatum* | Linden viburnum | | ● | | ● | ● | | | ● | |
| *Vinca minor & V. major* | Periwinkle | ● | ● | ● | ● | ● | ● | | ● | |
| *Wisteria floribunda* | Japanese wisteria | | | ● | | ● | ● | | ● | |